

Notic of Allowability

Application No.

10/000,020

Examiner

DiLinh Nguyen

Applicant(s)

TAGO ET AL.

Art Unit

2814

AW

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/22/04.
2. ☒ The allowed claim(s) is/are 1-5, 7, 9-15 and 17-20.
3. ☒ The drawings filed on 04 December 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Wael Fahmy
SPE 2814

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Liam McDowell on 5/27/04.

In the claims:

in line 9 of claim 1, delete "and";

in line 12 of claim 1, delete "." and insert --; --;

after line 12 of claim 1, insert --wherein the reaction layer is uniformly formed between the semiconductor chips; and

wherein the pressing step is carried out such that the bonding is performed via interatomic force by approaching the activated electrode surface to an interatomic distance.— ~~and~~ ✓

→ cancel claims 6 and 8.

in line 9 of claim 14, delete "and";

in line 12 of claim 14, delete "." and insert --; --;

after line 12 of claim 14, insert --a reaction layer is uniformly formed between the semiconductor chips; and

wherein the pressing step is carried out such that the bonding is performed via interatomic force by approaching the activated surface of the solder to an interatomic distance.—~~and~~

→ cancel claim 16.

in line 8 of claim 19, delete "and";

in line 11 of claim 19, delete "." and insert --; --;

after line 11 of claim 19, insert --a reaction layer is uniformly formed between the semiconductor chips; and

wherein the pressing step is carried out such that the bonding is performed via interatomic force by approaching the activated surface of the plural metal bumps to an interatomic distance.—

REASONS FOR ALLOWANCE

Claims 1-5, 7, 9-15 and 17-20 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record fail to disclose the combination of all the limitations recited, including pressing such that a reaction layer is not formed or pressing the adjacent semiconductor chips together to bond them without heating; the pressing step is carried out such that the bonding is performed via interatomic force by approaching the activated surface of the plural metal bumps to an interatomic distance and entirely heating the semiconductor chips.

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Therefore, the amended limitation together with the overall the method for sequentially laminating and mounting a plurality of semiconductor chips is neither anticipated nor rendered obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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